

## STATE OF TENNESSEE DEPARTMENT OF HEALTH **ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL Lab Services - Jackson Regional Lab Jackson, TN 38301 731-426-0686

TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Geoff Klein

**TDEC-DWS** 200 East Race St Knoxville, TN 37763 Lab ID: N00004080 Nashville Central Laboratory

Sampling Agency: TDEC: Division of Water Supply

**Billing Code:** 

327.39-12

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

Analytical Supervisor

N00004080001

**Project Name:** 

Sample Description:

KINGSTON WTP

Sampler Project Name: FINISH

**Project Site No.:** 

Station No.:

Date/Time Collected:

02/02/2009 10:20

Sampler's Name:

GEOFF KLEIN

County: Sample Matrix:

ROANE - 73

EFO:

Water Knoxville

Sampling Agency:

TDEC-DWS

Billing Code:

327.39-12

Send Report To: Agency Invoiced: TDEC-DWS TDEC-DWS

**Priority Date:** 

Date/Time Received:

02/02/2009

13:05

Received By:

P Singh

**Field Determinations** 

pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other:

Flow:

CFS

TEST: Alkalinity, Total	ME	ΓHOD: EPA 31	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	55	mg/L	3.8	10	S Burchfield	2/3/2009

TEST: Hardness, Calcium	ME.	THOD: SM 350	0-Ca D			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	54	mg/L	0.7	1	P Leathers	2/3/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

N00004080002

**Project Name:** 

Sample Description:

KINGSTON WTP

Sampler Project Name: RAW

**Project Site No.:** 

Station No.:

Date/Time Collected:

02/02/2009 10:25

Sampler's Name:

**GEOFF KLEIN** 

County: Sample Matrix: **ROANE - 73** 

EFO:

Water

**Sampling Agency:** 

Knoxville

**Billing Code:** 

**TDEC-DWS** 327.39-12

Send Report To: Agency Invoiced: **TDEC-DWS** TDEC-DWS

**Priority Date:** 

Date/Time Received:

02/02/2009

13:05

Received By:

P Singh

**Field Determinations** 

pH:

Chlorine, residual: Conductivity: Temperature:

**Dissolved Oxygen:** 

Other:

Flow:

**CFS** 

TEST: Alkalinity, Total	ME	THOD: EPA 31	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL.	ANALYZED BY:	DATE
Total Alkalinity	60	mg/L	3.8	10	S Burchfield	2/3/2009

TEST: Hardness, Calcium	ME <sup>-</sup>	THOD: SM 350	0-Ca D			
ANALYTE	RESULT	UNITS	MDL.	MQL	ANALYZED BY:	DATE
Calcium hardness	57	mg/L	0.7	1	P Leathers	2/3/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

N00004080003

**Project Name:** 

Sample Description:

**ROCKWOOD WTP** 

Sampler Project Name: FINISH

**Project Site No.:** Station No.:

Date/Time Collected:

02/02/2009 10:50

Sampler's Name:

**GEOFF KLEIN** ROANE - 73

County: Sample Matrix:

Water

EFO:

Knoxville

Sampling Agency: Billing Code:

**TDEC-DWS** 327.39-12

Send Report To: Agency Invoiced:

TDEC-DWS TDEC-DWS

**Priority Date:** 

Date/Time Received:

02/02/2009

13:05

Received By:

P Singh

**Field Determinations** 

pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other:

Flow:

**CFS** 

TEST: Alkalinity, Total	ME	THOD: EPA 31	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	69	mg/L	3.8	10	S Burchfield	2/3/2009

TEST: Hardness, Calcium	ME:	THOD: SM 350	0-Ca D			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	64	mg/L	0.7	1	P Leathers	2/3/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

N00004080004

**Project Name:** 

Sample Description:

**ROCKWOOD WTP** 

Sampler Project Name: RAW

**Project Site No.:** 

Station No.:

**Date/Time Collected:** 

02/02/2009 10:55 GEOFF KLEIN

Sampler's Name: County:

**ROANE - 73** 

**Sample Matrix:** 

Water

EFO:

Knoxville

Sampling Agency: Billing Code:

TDEC-DWS 327.39-12

Send Report To:
Agency Invoiced:

TDEC-DWS TDEC-DWS

**Priority Date:** 

Date/Time Received:

02/02/2009

13:05

Received By:

P Singh

Dissolved Oxygen: Other:

**CFS** 

**Field Determinations** 

Chlorine, residual:

Conductivity:

Temperature:

pH:

Flow:

TEST: Alkalinity, Total	ME.	THOD: EPA 31	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	75	mg/L	3.8	10	S Burchfield	2/3/2009

TEST: Hardness, Calcium	ME	THOD: SM 350	0-Ca D	-		
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	59	mg/L	0.7	1	P Leathers	2/3/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

**MQL - Method Quantitation Limit** 



## STATE OF TENNESSEE DEPARTMENT OF HEALTH **ENVIRONMENTAL LABORATORIES**

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TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Geoff Klein

TDEC-DWS 200 East Race St Knoxville, TN 37763 Lab ID: N00004080 Nashville Central Laboratory

Sampling Agency: TDEC: Division of Water Supply

**Billing Code:** 

327.39-12

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

Analytical Supervisor

N00004080001

**Project Name:** 

Sample Description:

KINGSTON WTP

Sampler Project Name: FINISH

**Project Site No.:** 

Station No.:

Date/Time Collected:

02/02/2009 10:20 **GEOFF KLEIN** 

Sampler's Name: County:

ROANE - 73

Sample Matrix:

Water

EFO: Sampling Agency: Knoxville

**Billing Code:** 

TDEC-DWS 327.39-12

Send Report To: Agency Invoiced: TDEC-DWS TDEC-DWS

**Priority Date:** 

Date/Time Received:

02/02/2009

13:05

Received By:

P Singh

**Field Determinations** 

pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other:

Flow:

**CFS** 

TEST: Digestion Metals	MET	HOD: EPA 20	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	02/03/2009				A Wilson	2/3/2009

TEST: ICP-MS	ME"	THOD: EPA 200	0.8				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Arsenic	U	μg/L	0.93	5	M Pattanayek	2/3/2009	
Barium	20	μg/L	2.5	5	M Pattanayek	2/3/2009	
Beryllium	U	μg/L	0.11	1	M Pattanayek	2/3/2009	
Cadmium	U	μg/L	0.41	1	M Pattanayek	2/3/2009	
Chromium	Ū	μg/L	2.0	5	M Pattanayek	2/3/2009	
Cobalt	0.11J	μg/L	0.04	1	M Pattanayek	2/3/2009	
Lead	0.11J	μg/L	0.10	1	M Pattanayek	2/3/2009	
Manganese	U	μg/L	0.42	1	M Pattanayek	2/3/2009	
Selenium	Ü	μg/L	1.3	5	M Pattanayek	2/3/2009	
Thallium	0.49J	μg/L	0.03	1	M Pattanayek	2/3/2009	
Vanadium	U	μg/L	3.4	5	M Pattanayek	2/3/2009	

TEST: Mercury	ME	THOD: EPA 24	5.1			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.13	0.2	A Wilson	2/3/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00004080002

**Project Name:** 

Sample Description:

KINGSTON WTP

Sampler Project Name: RAW

**Project Site No.:** Station No.:

Date/Time Collected:

02/02/2009 10:25

Sampler's Name:

**GEOFF KLEIN** 

County: Sample Matrix: ROANE - 73

EFO:

Water Knoxville

Sampling Agency: **Billing Code:** 

TDEC-DWS 327.39-12 TDEC-DWS

Send Report To: Agency Invoiced:

TDEC-DWS

**Priority Date:** 

Date/Time Received:

02/02/2009

13:05

Received By:

P Singh

 <del></del>	<del> · · · · · · · · · · · · · · · · ·</del>
METHOD: E	PA 200.2

**TEST: Digestion Metals** MQL ANALYZED BY: DATE MDL **RESULT** UNITS **ANALYTE** 02/03/2009 A Wilson 2/3/2009 **Digestion Metals** 

**Field Determinations** 

Chlorine, residual: Conductivity:

**Dissolved Oxygen:** 

**CFS** 

Temperature:

:Ha

Other:

Flow:

TEST: ICP-MS METHOD: EPA 200.8 MDL MQL ANALYZED BY: DATE RESULT UNITS ANALYTE 5 U 0.93 M Pattanayek 2/3/2009 μg/L Arsenic 22 µg/L 2.5 5 M Pattanayek 2/3/2009 Barium 1 M Pattanayek 2/3/2009 U µg/L 0.11 Beryllium U 0.41 1 M Pattanayek 2/3/2009 Cadmium μg/L U 2.0 5 M Pattanayek 2/3/2009 Chromium μg/L 1 2/3/2009 0.19J 0.04 M Pattanayek Cobalt μg/L 0.26J μg/L 0.10 1 M Pattanayek 2/3/2009 Lead 27 0.42 1 M Pattanayek 2/3/2009 μg/L Manganese 5 2/3/2009 U 1.3 M Pattanayek Selenium μg/L 0.13J 0.03 1 M Pattanayek 2/3/2009 μg/L Thallium U 3.4 5 M Pattanayek 2/3/2009 Vanadium μg/L

TEST: Mercury	METHOD: EPA 245.1					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.13	0.2	A Wilson	2/3/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit MQL - Method Quantitation Limit

N00004080003

**Project Name:** 

Sample Description:

**ROCKWOOD WTP** 

Sampler Project Name: FINISH

Project Site No.: **Station No.:** 

Date/Time Collected:

02/02/2009 10:50

Sampler's Name: County:

**GEOFF KLEIN** 

Sample Matrix:

ROANE - 73

EFO: Sampling Agency: Water Knoxville TDEC-DWS

**Billing Code:** Send Report To: Agency Invoiced: 327.39-12 TDEC-DWS TDEC-DWS

**Priority Date:** 

Date/Time Received:

02/02/2009

13:05

Received By:

P Singh

**Field Determinations** 

pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other:

Flow:

**CFS** 

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	02/03/2009				A Wilson	2/3/2009

TEST: ICP-MS	MET	THOD: EPA 200	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.93	5	M Pattanayek	2/3/2009
Barium	25	μg/L	2.5	5	M Pattanayek	2/3/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	2/3/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	2/3/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	2/3/2009
Cobalt	0.07J	μg/L	0.04	1	M Pattanayek	2/3/2009
Lead	U	μg/L	0.10	1	M Pattanayek	2/3/2009
Manganese	2.0	μg/L	0.42	1	M Pattanayek	2/3/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	2/3/2009
Thallium	0.06J	μg/L	0.03	1	M Pattanayek	2/3/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	2/3/2009

TEST: Mercury	METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Mercury	U	μg/L	0.13	0.2	A Wilson	2/3/2009	

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00004080004

**Project Name:** 

Sample Description:

**ROCKWOOD WTP** 

Sampler Project Name: RAW

**Project Site No.:** Station No.:

**Date/Time Collected:** 

02/02/2009 10:55

Sampler's Name: County:

**GEOFF KLEIN** ROANE - 73

Sample Matrix:

Water

EFO: Sampling Agency: Knoxville TDEC-DWS

**Billing Code:** Send Report To: 327.39-12 TDEC-DWS TDEC-DWS

Agency Invoiced: **Priority Date:** 

Date/Time Received:

02/02/2009

13:05

Received By:

P Singh

**Field Determinations** 

:Ha

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other:

Flow:

**CFS** 

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	02/03/2009				A Wilson	2/3/2009

TEST: ICP-MS	ME	THOD: EPA 200	0.8					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE		
Arsenic	Ū	μg/L	0.93	5	M Pattanayek	2/3/2009		
Barium	26	μg/L	2.5	5	M Pattanayek	2/3/2009		
Beryllium	U	μg/L	0.11	1	M Pattanayek	2/3/2009		
Cadmium	U	μg/L	0.41	1	M Pattanayek	2/3/2009		
Chromium	U	μg/L	2.0	5	M Pattanayek	2/3/2009		
Cobalt	0.11J	μg/L	0.04	1	M Pattanayek	2/3/2009		
Lead	0.17J	μg/L	0.10	1	M Pattanayek	2/3/2009		
Manganese	15	μg/L	0.42	1	M Pattanayek	2/3/2009		
Selenium	U	μg/L	1.3	5	M Pattanayek	2/3/2009		
Thallium	0.04J	μg/L	0.03	1	M Pattanayek	2/3/2009		
Vanadium	U	μg/L	3.4	5	M Pattanayek	2/3/2009		

TEST: Mercury	ME	METHOD: EPA 245.1				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.13	0.2	A Wilson	2/3/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit